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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,362	08/14/2006	Takuya Tsukagoshi	129107	6000
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EXAMINER				
CHANG, AUDREY Y				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/589,362

**Applicant(s)**

TSUKAGOSHI ET AL.

**Examiner**

Audrey Y. Chang

**Art Unit**

2872

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10, 13-20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date 8/14/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

#### *Remark*

- This Office Action is in response to applicant's preliminary amendment filed on August 14, 2006, which has been entered into the file.
- By this amendment, the applicant has amended claims 5-7, 10, 19 and 20 and has canceled claims 11-12, and 21.
- Claims 1-10, 13-20 and 22-23 remain pending in this application.

#### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 1-10, 13-20 and 22-23 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

The claims include the following phrases that do not appear to have logical and structural relationships among them which therefore make the scopes of the claims unclear. The confusing phrases are: "data image", "digital information", "data page", "bit map image", "data image address", "block information", "retrieval data block", "address", "target data image", and "encoded data image" (claim 15). Clarifications in the claims are required to make each phrases and terms logically and structurally related to each other.

It is not clear what is being multiplexedly recorded? The multiplexing is between each data page or between each data blocks within a page? The phrase “using a data image to be retrieved onto holographic recording medium” is not making any sense.

The applicant is respectfully noted that, the term “data page” usually used in the art for the data information displayed on the spatial light modulator to modulate the signal beam and to record the data information in the hologram. In light of the specification of instant application it appears, the holographic recording and retrieving system has (1) *data* information (such as data page), to modulate the signal beam to record the hologram, and (2) *address* information or data that can be encoded in the data page, also is recorded in the hologram. The recorded hologram can be reconstructed using signal beam with coded *address* information to reconstruct or *retrieve address information*. The recorded hologram can also be *reconstructed* using reference beam to reconstruct the **data page information**. The terminologies and the phrases should be clearly stated so that the proper channel of the retrieving or reconstruction is identified and corresponding information is retrieved or detected.

It appears that there is retrieve process for retrieving address information and there is reconstruction process for reconstruct the recorded data page as hologram. The two processes should be clearly identified and distinct to avoid confusions.

The claims fail to disclose what does it mean by “encoding method”? The encoding method is to encode what? The data information or the address information or both?

The applicant is also respectfully noted that a data page does not have “ON” or “OFF” pixels by itself since data page should be just abstract numbers. It is only when the data being **digital** data is represent and displayed on the spatial light modulator, that the spatial light modulator correspondingly has ON or OFF (or bight or dark) pixels. The pixels are in the spatial light modulator not in the data itself.

The phrase “data page ... for providing certain number of ON pixels” is wrong.

The phrase "all pixels in a retrieval data block other than a retrieval data block on which the block information is displayed are OFF pixels" as recited in claim 2 is completely confusing. What is considered to be a "retrieval data block"?

The phrase "part of data blocks (how many blocks?) in the data page is employed as a dedicated retrieval data block and an encoding method (what is this?) is used to provide a large number (how large?) of ON pixels for a data image formed in the dedicated retrieval data block than for a data image for another data block" recited in claims 3-4 are completely confusing.

The phrase "the identified data page" recited in claims 10, 13 and 14, each lacks proper antecedent basis from its based claim.

The phrases "capable of" and "can be" recited in various claims is confusing and indefinite since this phrases are conditional phrases. It is not clear if the feature after "capable" or "can be" is or is not part of the limitations sought for patent.

The **scopes** of the claims are **really unclear** for the reasons stated above.

The claims at this juncture contain numerous errors, confusions and indefiniteness. The claims also are very narrative. The examiner can only point out a few it is applicant's responsibility to clarify ALL discrepancies and errors to make the claims in comply with requirements of 35 USC 112.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-10, 13-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Henshaw et al (PN. 5,319,629).**

***The scopes of the claims are very unclear for the reasons stated in the rejection under 35 USC 112, second paragraph above. The claims can only be examined in the broadest interpretation.***

The claims are being examined in the following interpretations: "data page" is interpreted as the data information displayed on the spatial light modulator for modulating the signal beam for recording the hologram. "Data image" and "data image address" is interpreted as "address information" for the data page. The "encoding method" is interpreted as encoding method for encoding the address information in the data page.

For claims 1, 9, 15 and 23:

Henshaw et al teaches a *content addressable optical data storage system* in a holographic recording and retrieving system wherein the recording and retrieving system is comprised of a *laser light source* (102, Figure 2) for generating a coherent light beam (103) that is to be splitted by a *beam splitter* (104) into a *reference beam* (106) and a *data* or an *object beam* (108), coherent to each other. The holographic recording and retrieving system further comprises an *object optical system* (elements 122, 126, 128) and a *reference optical system* (elements 111, 112, 114, and 116) to direct the object beam and the reference beam respectfully to a *holographic recording medium* (118), wherein the object optical system includes a *spatial light modulator* (126) wherein the page data intended to be recorded as the hologram is being displayed on the spatial light modulator. The data page is being represent by the spatial light modulator as a *two-dimensional array of bright (ON) and dark (OFF) pixels* which forms a *bit map image*, and this means the data in the data pages is essentially digital data, (please see column 6, lines 36-39). Henshaw et al teaches that the plurality of data pages are recorded in the holographic recording medium with different wavelengths and Bragg angles, which means the data pages are recorded in multiplexing scheme, (i.e. wavelength and angle multiplexing methods, please see column 6, line 65 to column 7, line 2).

The holographic recording and retrieving system further comprises a *retrieving imaging device* or address output plane (144, Figure 1) for receiving diffracted light beams from the holographic recording medium when the medium is being illuminated by a *signal beam* or *searching beam* travels along the object optical system, (please see column 7, lines 40-46 and column 8, lines 4-15). Henshaw et al teaches that the address output plane or the retrieving imaging device is to receive and detect the *address information* it is therefore either implicitly or obvious to one skilled in the art to include a signal processing circuit for processing the received output signal at the address output plane (144) to detect the address information.

The holographic recording and retrieving system also comprises a *reproduction imaging device* or output data plane (134, Figure 1) for receiving the reproduced holographic image contains the recorded data page when the recording medium is being illuminated by the reference serves as the reconstruction or read beam based on the address information detected in the image retrieving device, so that the data reproduction is address based, (please see column 7, lines 3-27).

Henshaw et al teaches that the data page is displayed on the spatial light modulator (126) in a bit map format with patterns of ON (bright) and OFF (dark) pixels. Henshaw also teaches that the address information is encoded on the *spatial light modulator* (126) as target data field or search arguments. The encoded address information on the spatial light modulator is essentially represent by plurality of ON (bright) and OFF (dark) pixels, (please see Figures 2-4, column 3, lines 3-30). The encoded address information is displayed on the spatial light modulator (126) that modulates the signal beam propagates in the object optical system to illuminates the holographic recording medium (118) which reproduces address information in the diffracted beams. It is implicitly true the diffracted light beam with maximum intensity (i.e. major diffraction order) that yields the address information.

The retrieved address information then is fed to the select the reference beam corresponding to the address information for reproducing the selected or target data information recorded in the holographic recording medium.

The reference has therefore met all the limitations of the claims. This reference teaches that the data page has the format as shown in Figure 2 and the data page with the encoded address information is shown in Figure 3A. It however does not teach explicitly that the data page is being equally divided into data blocks with the address information being identified as block information. But the data page can be arbitrarily divided up into either one block or a plurality blocks. Henshaw et al demonstrates to encode the address information for one data block and the same process can be repeatedly applied to other blocks if there are more than one blocks of data in the data page, for the benefit of allowing the data page be handled block by block to reduce the amount of the data being process at one time.

With regard to claims 2 and 16, the scopes of the claims are not clear the claim can only be examined in the broadest interpretation. It is implicitly true that when retrieving the address information, the pixels on the spatial light modulator that are irrelevant to the address information should remain OFF.

With regard to claims 3-4 and 17-18, the scopes of the claims are not clear the claims can only be examined in the broadest interpretation. It is implicitly true that for the intended data to be reproduced, (which corresponds to the dedicated data block), the address information encoded in the data block should contain more ON pixels than the address information would be encoded in other block that is not intended for the reproduction so that only the desired data block is searched.

With regard to claims 5 and 19, the beam diameter of the signal beam that is modulated by the encoded address information is certainly determined by the encoded address information on the spatial light modulator.

With regard to claims 6-7, it would have been obvious to one skilled in the art to make the address information for different data recorded to be displayed sequentially on the spatial light modulator



Art Unit: 2872

so that only one of address information is retrieved and only the corresponding data is reproduced based on the retrieve address information at a time.

With regard to claims 8 and 22, it is implicitly true that the address information can be displayed for all the data blocks so that multiple diffraction beams can be resulted. It is implicitly true the diffraction light with the maximum intensity which corresponds to the major diffraction order is used to retrieve the address information for best signal for reveal such information.

With regard to claims 10, 13 and 14, Henshaw et al teaches that the reproduction of the holographic data is address based which means the reproducing reference beam is generated based on the retrieved address information, (please see column 7, lines 3-27).

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. **Claims 1-10, 13-20 and 22-23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 18-19 and 27 of U.S. Patent No. 7,274,497.**

Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a holographic recording and retrieve system wherein a search optical system or an object optical system is used to retrieve the address information.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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